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*MeS*

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
89/010,256	01/21/98	HARVEY	ENL-197-A

LM01/1026

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EXAMINER  
ENCARNACION, Y

ART UNIT	PAPER NUMBER
2751	4

DATE MAILED: 10/26/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

*See Attached...*

# Office Action Summary

Application No.  
09/010,256

Applicant(s)  
Ian Nigel Harvey

Examiner  
Yamir Encarnacion

Group Art Unit  
2751



☒ Responsive to communication(s) filed on Jan 21, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-8 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-8 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☒ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Priority/Declaration***

1. Receipt is acknowledged of papers filed under 35 U.S.C. 119 (a)-(d) based on an application filed in Great Britain on July 15, 1997. Applicant has not complied with the requirements of 37 CFR 1.63(c) because while the declaration does acknowledge the July 15, 1997 application, the application claims priority based on the date of July 15, 1996 instead. For priority to be granted, a new oath or declaration is required having the date of filing of the foreign application on which priority is claimed be consistent with the date of filing stated on the certified copy of the foreign application that was provided.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In page 15, at about line 6, claim 3 it appears that the line "a block from a page of "free" status" should be amended to read "allocating a block from a page of "free" status."

Claims 4-8 are rejected because they incorporate the defect of the parent claim.

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***Claim Rejections - 35 USC § 103***

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable ANTHONY (USPN: 4,885,680) in view of REINDERS (USPN: 5,897,660) and WEISER (USPN: 5,321,834) and LAI (USPN: 5,075,848).

As to claim 3, ANTHONY teaches of a microprocessor system comprising two or more central processing units(CPU's)(See figures 1-3, the elements labeled PE), each CPU having a cache (See figures 2-3, the elements labeled CACHE) and the system further comprising a system memory (See figures 1-3, the elements labeled MM). In ANTHONY, the system memory is divided into pages, the pages are divided into blocks, and the pages are flagged with one of two statuses, namely "cacheable" and "non-cacheable" (See figures 6-7). ANTHONY discloses that when coherence is maintained at run-time, the system is responsive to a request for allocation of memory space of the cacheable or non-cacheable type as shown in column 8, lines 14-20 reproduced below for convenience:

"To represent the cacheability attributes of data during run time, the virtual address space is divided into classes corresponding to the cacheability classes. Then, as part of storage allocation, data of a given class is allocated in an appropriate class of virtual memory. Thus the address range may be interpreted to determine the cacheability class."

Also, as described in column 10, lines 53-60, the system is also responsive to a request for allocation of memory space of the cacheable or non-cacheable type when coherence is maintained at compile time.

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ANTHONY does not teach of the pages having a "free" status and consequently it does not teach the step of "changing the status of [a] page from "free" to "cacheable" or "non-cacheable."

REINDERS and WEISER teach of allocating memory pages on demand, that is to say, as memory is requested, the state of a page changes from a state of "free" to an "allocated" state.

One of ordinary skill in the art would have found it desirable to use a memory allocation/deallocation scheme like those disclosed in either of REINDERS or WEISER for the purpose of increasing the efficiency of memory space usage. Therefore, it would have been reasonable to one of ordinary skill in the art to use a memory allocation/deallocation scheme like the one disclosed by either REINDERS or WEISER because the ANTHONY/REINDERS or the ANTHONY/WEISER combination would have used memory space more efficiently.

As to claim 1 and the limitation of pages having a "cacheable" status being accessed by the requesting processor (because the data to be stored in the "cacheable" pages is not shared) and pages having a "non-cacheable" status being accessed by more than one processor (because the data to be stored in the "non-cacheable" pages is shared) LAI teaches that is desirable to place shared objects in non-cacheable pages for the purpose of preventing the caching of shared objects in order to avoid unnecessary coherency traffic. (See figure 3; column 12, lines 32-37; column 19, lines 23-40). One of ordinary skill in the art would have recognized that a reduction in unnecessary coherency traffic would have resulted in an increase in performance. Therefore, one of ordinary skill in the art would have been motivated to modify either the ANTHONY/REINDERS or the ANTHONY/WEISER combination so that the shared data was

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placed in the "non-cacheable" pages and the non-shared data was place in the "cacheable" pages because the ANTHONY/REINDERS/LAI or the ANTHONY/WEISER/LAI combination would have achieved increased performance by reducing unnecessary coherency traffic.

As to claims 2 and 4, pages that are not being used become "free" see REINDERS column 1, line 52-54.

*Conclusion*

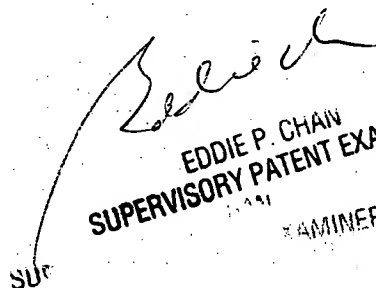
Any inquiry concerning this or an earlier communication from the Examiner should be directed to Yamir Encarnacion by phone at (703) 308-5466.

Any formal response to this action intended for entry should be mailed to Commissioner of Patents and Trademarks, Washington, D.C. 20231 or faxed to (703) 308-9051 and labeled "FORMAL" or "OFFICIAL". Any informal or draft communication should be faxed to (703) 305-9731 and labeled "INFORMAL" or "UNOFFICIAL" or "DRAFT" or "PROPOSED" and followed by a phone call to the Examiner at the above number. Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Yamir Encarnacion

Patent Examiner

October 22, 1999

  
EDDIE P. CHAN  
SUPERVISORY PATENT EXAMINER  
EXAMINER